

Source Status: New Modification Expansion Relocation Permit Status: New Renewal

PSD NSPS NESHAPs Previous Permit Number: Construction _____ Operating _____

	Pounds/Hour			Tons/Year				Date of Data	*	Applicable Standard 1200-3-
	Actual	Potential	Allowable	Actual	Potential	Allowable	Net			
TSP Stack				1.88		7.00		9/30/16-1/26/17		07-.04(2)
Fugitive PM				2.05		2.05				08
SO ₂										
CO										
VOC										
NO _x										

* - Source of data is from the applications dated September 30, 2016; a subsequently revised application dated December 15, 2016; and an APC 111 form revised and submitted January 26, 2017.

Annual actual PM emissions from dust collector (controlled emissions). All emission factors were taken from AP-42 entitled Concrete Batching listed in Table 11.12-5 dated June 2006. Other assumptions noted herein.

Actual emissions (stack)

1. Silo loading

a. **From pneumatic loading of cement** from a delivery truck to a cement silo with fabric filter:

Annual emissions are: $130,000 \text{ yd}^3/\text{yr} \times 0.000243 \text{ lbs/PM/yd}^3 = 31.6 \text{ lbs PM/yr}$ for cement loading

Hourly PM emissions = $31.6 \text{ lbs PM/yr} / 957.5 \text{ hrs/yr} = 0.033 \text{ lbs PM/hr}$

b. **From pneumatic loading of cement supplement (fly ash)** from a delivery truck to a cement supplement silo with fabric filter:

Annual emissions are: $130,000 \text{ yd}^3/\text{yr} \times 0.000325 \text{ lbs PM/yd}^3 = 42.25 \text{ lbs PM/yr}$

Hourly PM emissions = $42.25 \text{ lbs PM/yr} / 142.4 \text{ hrs/yr} = 0.30 \text{ lbs PM/hr}$

2. Cement batcher/cement weigh hopper emissions

a. **Loading cement from a cement silo to the cement batcher/cement weigh hopper** with a small fabric filter or cartridge filter control has essentially the same emissions and is similar control to that of pneumatic loading of cement from a truck to cement silo with a baghouse which has the same collection efficiency.

Annual emissions are: $130,000 \text{ yd}^3/\text{yr} \times 0.000243 \text{ lbs/PM/yd}^3 = 31.6 \text{ lbs PM/yr}$ for cement loading

Hourly emissions = $200 \text{ yd}^3/\text{hr} \times 0.000243 \text{ lbs/PM/yd}^3 = 0.049 \text{ lbs/hr}$

b. **Loading cement supplement (fly ash) from a silo to the cement batcher** with a small fabric filter or cartridge filter control has essentially the same emissions and is similar control to that of pneumatic loading of fly ash from a truck to a fly ash silo with a baghouse which has the same collection efficiency.

Annual emissions are: $130,000 \text{ yd}^3/\text{yr} \times 0.000325 \text{ lbs PM/yd}^3 = 42.25 \text{ lbs PM/yr}$

Hourly emissions = $200 \text{ yd}^3/\text{hr} \times 0.000325 \text{ lbs/PM/yd}^3 = 0.065 \text{ lbs/hr}$

3. Truck load out emissions with fabric filter control

Load out of the combined concrete mix of sand (S) and aggregate (A) from the S & A weigh hopper and cement and fly ash from the cement weigh batcher are discharged into the top of the transit mix truck) with dust suction applied during loadout with collected/captured emissions sent to a fabric filter (baghouse).

Annual emissions are: $130,000 \text{ yd}^3/\text{yr} \times 0.0276 \text{ lbs PM/yd}^3 = 3588 \text{ lbs PM/yr}$

Hourly emissions = $200 \text{ yd}^3/\text{hr} \times 0.0276 \text{ lbs/PM/yd}^3 = 5.52 \text{ lbs PM/hr}$

Total annual stack PM emissions:

$31.6 + 42.25 + 31.6 + 42.25 + 3588 = 3735.7 \text{ lbs PM/yr}$ or 1.88 tons PM/yr

Actual fugitive emissions)

1. Sand and aggregate handling emissions:

The total emission factor (AP-42) from the 6 operations comprising the handling of sand and aggregate is $0.0237 \text{ lbs PM/yd}^3$

Annual emissions are: $130,000 \text{ yd}^3/\text{yr} \times 0.0237 \text{ lbs PM/yd}^3 = 3081 \text{ lbs PM/yr}$

2. Weigh hopper loading of sand and aggregate (S & A) emissions:

The weigh hopper or weigh batcher for handling sand and aggregate contains moist sand and aggregate and typically comes from washed sand and aggregate and in TN typically has low emissions and requires no control. The AP-42 emission factor denoted as weigh hopper loading of 0.0079 lbs PM/yd³ is utilized.

Annual emissions are: 130,000 yd³/yr x 0.0079 lbs PM/yd³ = 1027 lbs PM/yr

Total annual fugitive PM emissions from S & A handling plus S & A weigh hopper loading =
3081 + 1027 = 4108 lbs PM/yr or 2.05 tons PM/yr

1. Allowable stack emissions

1. Silo loading

25 tons of cement per truck load of cement or cement supplement delivered to a silo is standard for concrete batch plants and will be used.

25 tons of cement per TL x 2000 lbs/ton x 1/491 lbs cement/yd³ concrete = 101.833 yd³ of concrete per TL of cement.

25 tons of cement supplement per TL x 2000 lbs/ton x 1/73 lbs cement supplement/yd³ concrete = 684.9315 yd³ concrete per TL of cement supplement.

The annual number of cement TLs = 130,000 yd³ concrete/yr x 1/101.833 yd³ of concrete per TL of cement = 1276.6 TLs cement/yr.

The annual number of cement supplement TLs = 130,000 yd³ concrete/yr x 1/684.9315 yd³ of concrete per TL of cement supplement = 189.8 TLs of cement supplement/yr.

The loading time for a truck load of cement or fly ash to a silo loading is 45 minutes.

The allowable PM during a truck load of cement or cement supplement using 45 minutes as the TL silo loading time =

0.25 grains/ft³ x 2340 ft³/min x 45 min/TL x 1 lb PM/7000 grains x = 3.76 lbs PM/TL

Corresponding annual hours for cement silo loading is 1276.6 TLs/yr x 45 min/TL x 1/60 min/hr = 957.5 hrs/yr

Corresponding annual hours for cement supplement silo loading is 189.8 TLs/yr x 45 min/TL x 1/60 min/hr = 142.4 hrs/yr

Hourly PM allowable for cement or cement supplement loading to the silo = 3.76 lbs PM TL/45 min/TL x 60 min/hr = 5.01 lbs PM/hr

The annual PM allowable emissions in lbs PM/yr for cement silo loading = 1276.6 TLs x 3.76 lbs PM/TL = 4800 lbs PM/yr

The annual PM allowable emissions in lbs PM/yr for cement supplement silo loading = 189.8 TLs/yr x 3.76 lbs PM/TL = 713.65 lbs PM/yr

The total annual PM allowable emissions in lbs/yr for both cement and cement supplement silo loading = 5513.65 lbs PM/yr

2. Concrete batch plant operations

The concrete batch plant and the associated equipment operate under a different time frame than truck loading to the silos.

The annual batch plant hours = 130,000 yd³ concrete/yr x 1/200 yd³/hr = 650 hrs/yr

The allowable PM for the cement batcher with a fabric filter (which handles both cement and cement supplement emptied from the silos into the cement weigh batcher) is calculated as follows

180 ft³/min x 60 min/hr x 0.25 gr/dscf x 1 lb PM/7000 grains = 0.39 lbs PM/hr

The annual PM allowable emissions in lbs/yr for the cement batcher = 0.39 lbs PM/hr x 650 hrs/yr = 253.5 lbs PM/yr

The allowable PM for a truck loadout controlled by a fabric filter is calculated as follows:

The hourly allowable for the truck load out = 5880 ft³/min x 60 min/hr x 0.25 gr/dscf x 1 lb PM/7000 grains = 12.60 lbs PM/hr.

The annual PM allowable emissions in lbs/yr for truck load out = 12.60 lbs PM/hr x 650 hrs/yr = 8190 lbs PM/yr

Total annual allowable for Stack emissions:

4800 + 713.65 + 253.5 + 8190 = 13,957.2 lbs PM/yr or 6.98 tons PM/yr

Allowable Fugitive emissions.

Allowable emissions will be set to actuals which represent reasonable precautions to control fugitive dust. TAPCR 1200-03-08-.01 and 1200-03-08-.03 are applicable whereby fugitive dust emission standards are specified in the construction permit (Condition 17) with a prescribed visible emission standard and reading technique (Condition 16).

1. Sand and aggregate handling emissions:

The total emission factor (AP-42) from the 6 operations comprising the handling of sand and aggregate is 0.0237 lbs PM/yd³

Annual emissions are: 130,000 yd³/yr x 0.0237 lbs PM/yd³ = 3081 lbs PM/yr

2. Weigh hopper loading of sand and aggregate (S & A) emissions:

The AP-42 emission factor denoted as weigh hopper loading of 0.0079 lbs PM/yd³ is utilized.

Annual emissions are: 130,000 yd³/yr x 0.0079 lbs PM/yd³ = 1027 lbs PM/yr

Total annual fugitive PM emissions from S & A handling plus S & A weigh hopper loading =
3081 + 1027 = 4108 lbs PM/yr or 2.05 tons PM/yr

PERMITTING PROGRAM: JAA/ERF DATE: Feb 1, 2017

CONSTRUCTION PERMIT SUMMARY REPORT

Company Name: MMC Materials, Inc. File Number: 24-0119 EPS Initials: JAA/ERF
 Permit Number(s): 972180 Source Point Number(s): 01
 Application Received (date): October 12, 2016 Application Complete (date): Dec 28, 2016 upon receipt of additional information requested by APC .

Air Quality Analysis Performed? Yes No

Briefly describe the project: (new source, modifications) (what the process is) (type controls proposed) (emissions expected, qualitative) (replacing what sources) (background information)

This new concrete batch plant in Rossville consists of a dry mix concrete batch plant with a cartridge fabric filter (CFF) for each of 3 silos, a fabric filter baghouse (FFB) for the cement batcher, and a fabric filter baghouse (FFB) for dust suction at the truck load out station with 3-sided curtains and rubber boot/tube for loading into the transit mix truck top through a metal shroud. Fabric filters have a collection efficiency in excess of 99.5%. The dust capture efficiency for truck load out is dependent on the extent load out features which allow dust to be captured. Capture efficiency can be in range per 70% per AP-42. Emission factors reflect overall control (capture x collection efficiency).

Stack and fugitive PM emissions were calculated using the emission factors from AP-42, Chapter 11.12 Concrete Batching, Table 11.12-5 and assumption detailed.

Rules Analysis

Title V Cond. Major Minor Source category listed in 1200-3-9-.01(4)(b)1.(i)? Yes No

Reason for PSD:	New source above ____ TPY	<input type="checkbox"/>	Sig. increase in ____ emissions	<input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Applicable NSPS:	40 CFR Part 60, Subpart ____	<input type="checkbox"/>	State Rule 1200-3-16-.	<input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Applicable NESHAP:	40 CFR Part 61, Subpart ____	<input type="checkbox"/>	State Rule 1200-3-11-.	<input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Applicable NESHAP:	40 CFR Part 63, Subpart ____	<input type="checkbox"/>	State Rule 1200-3-31-.	<input type="checkbox"/>	N/A <input checked="" type="checkbox"/>

Other Applicable State Rules

TSP Emissions:	1200-3- <u>07</u> -. <u>04(2)</u>	<input checked="" type="checkbox"/> N/A <input type="checkbox"/>	NO _x Emissions:	1200-3- ____ -. ____	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>
SO ₂ Emissions:	1200-3- <u>14</u> -. ____	<input type="checkbox"/> N/A <input type="checkbox"/>	Lead Emissions:	1200-3- ____ -. ____	<input type="checkbox"/> N/A <input checked="" type="checkbox"/>
CO Emissions:	1200-3- ____ -. ____	<input type="checkbox"/> N/A <input type="checkbox"/>	____ Emissions:	1200-3- ____ -. ____	<input type="checkbox"/> N/A <input type="checkbox"/>
VOC Emissions:	1200-3- ____ -. ____	<input type="checkbox"/> N/A <input type="checkbox"/>	____ Emissions:	1200-3- ____ -. ____	<input type="checkbox"/> N/A <input type="checkbox"/>

Visible Emissions from this source not to exceed 20 % opacity per Method 5 (Rule 1200-3- 5 -. 01(1))
 opacity per Method 9 (Rule 1200-3- 5 -. 03(6))
 Visible Emissions from roads and parking not to exceed 10 % opacity per Method 1 (Rule 1200-3- 8 -. 03)

Comments: _____